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| NALCO COMPANY 1601 W. DIEHL ROAD NAPERVILLE, IL 60563-1198 | | | CORDRAY, DENNIS R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1731 | |
| DATE MAILED: 04/27/2006 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/764,935

Applicant(s)

ST. JOHN ET AL.

Examiner

Dennis Cordray

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1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/8/2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-8 and 13-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Coscia et al (3556932).

Coscia et al discloses adding an aldehyde-functionalized vinylamide polymers either to preformed paper or to the fibrous suspension in a papermaking process (Abstract; col 7, lines 23-31). The polymers contain at least 50 mole percent, preferably greater than 75 mole percent, and up to 99 mole percent vinylamide (nonionic) units, which are exemplified by acrylamide (col 3, lines 42-60; col 8, Example 1, lines 9-10 and 73-75). The remainder of the monomer units in the polymer can be ionic monomers or nonionic "spacers" (such as vinyl acetate) (col 3, lines 46-49 and 58-60). Ionic monomers include cationic, such as diallyldimethyl ammonium chloride (DADMAC, also exemplified in col 3, lines 42-60; col 8, Example 1, lines 9-10 and 73-75), and anionic, such as acrylic acid (col 5, lines 69-72; col 10, Example 6, lines 45-46). The vinylamide units are partially glyoxylated so that the ratio of glyoxylated to non-glyoxylated units is from 0.06 to 0.2 (6-20% glyoxylated) (col 6, lines 59-67). The polymeric composition significantly overlaps the claimed composition. The molecular weight can be from 100,000 to 1,000,000 (col 3, lines 64-66). The polymer is added to

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the process in an amount from 0.2 to 2% by weight of the dried fibers (4-40 lb/ton) (col 7, lines 38-44).

The copolymers disclosed by Coscia et al are capable of functioning as dewatering aids because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Claims 1-4, 6-10 and 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Underwood et al (5674362).

Underwood et al discloses adding a glyoxylated acrylamide- DADMAC polymer (GPA) and an aminopolyamide-epichlorohydrin resin (APAE) to the fibrous suspension in a papermaking process (Abstract). Note that the use of "comprising" in instant Claim 1 allows other additives to be used in the process. The APAE and GPA resins can be added independently (col 4, lines 58-60). The GPA polymer contains from 75-95% (meth)acrylamide by weight, and from 5-25% by weight DADMAC (col 3, lines 54-63). Using 71 and 85 for the molecular weights of acrylamide and methacrylamide respectively and 161.7 for DADMAC, the molar percentage of (meth)acrylamide is calculated to be from 85 to 98%. Up to 10 weight percent of the acrylamide monomers can be replaced by other monomers, such as acrylic acid, thus both cationic and anionic

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monomers can be present (col 3, lines 56-61). The vinylamide units are at least partially glyoxylated by reacting with 0.5 to 2 glyoxal molecules per acrylamide monomer (col 4, lines 6-9). The polymeric composition significantly overlaps the claimed composition. The molecular weight can be up to about 100,000 (col 4, lines 1-4). The total amount of the two resins added is from 1 to 20 lb/ton and the ratio of GPA to APAE is from 1:1 to 5:1, thus the GPA is added in an amount of 0.83 to 16.67 lb/ton (col 4, lines 22-25 and 41-43).

The copolymers disclosed by Underwood et al are capable of functioning as dewatering aids because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coscia et al or Underwood et al in view of Sanchez (6315866).

Coscia et al and Underwood et al do not disclose a polymer containing 100% nonionic monomers, although Coscia et al disclose that as little as one ionic substituents per macromolecule may be sufficient (col 3, lines 9-11).

Sanchez teaches that polyacrylamides (100% nonionic) and copolymers of polyacrylamide and α,β -unsaturated quaternary ammonium compounds (i.e.-DADMAC) are known as wet end additives to increase dry strength of paper products (col 1, lines 49-51 and 61-63). Sanchez also discloses glyoxylated polyacrylamide-DADMAC copolymers as a known dry strength additive (Abstract; col 8, lines 32-58, particularly Polymer B). Sanchez discloses acrylamide-DADMAC copolymers as dry strength agents and teaches that the copolymers provide several other advantages in papermaking processes, such as improved drainage and retention (dewatering aid), improved sheet formation and increased brightness (Abstract; col 2, line 63 to col 3, line 4 and lines 29-30).

The art of Coscia et al, Underwood et al, Sanchez and the instant invention are analogous as pertaining to the use of glyoxylated acrylamide polymers in papermaking. Because of the similarity of function of both cationic and nonionic acrylamide polymers, and glyoxylated acrylamide polymers, it would have been obvious to one skilled in the art at the time of the invention to use a glyoxylated nonionic acrylamide polymer as a dewatering agent in the process of Coscia et al or Underwood et al in view of Sanchez as a functionally equivalent option with a reasonable expectation of success.

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coscia et al in view of Underwood et al.

Coscia et al does not disclose adding the glyoxylated acrylamide-DADMAC copolymer in an amount of 0.5 to 3 lb/ton.

Underwood et al discloses addition of glyoxylated acrylamide-DADMAC copolymer in an amount of 0.83 to 16.67 lb/ton (col 4, lines 22-25 and 41-43). It would have been obvious to one skilled in the art at the time of the invention to add the glyoxylated acrylamide copolymer in the claimed range in the process of Coscia et al in view of Underwood et al as a functionally equivalent option. It would also have been obvious to add the copolymer by spraying as a well known and functionally equivalent option.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coscia et al or Underwood et al in view of Carrier et al (5654198).

Coscia et al and Underwood et al do not disclose a polymer containing zwitterionic monomers.

Carrier et al discloses that monomers used in preparing polymers useful in aqueous systems for problems associated with particulates, emulsification and flocculation (i.e.-dewatering) can be anionic, cationic and zwitterionic (col 3, lines 14-49). Carrier et al discloses copolymers comprising acrylamides and the anionic, cationic or zwitterionic monomers (col 3, lines 50-54; col 3, line 66 to col 4, line 11).

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Pendant aldehyde functionality is added by covalently attaching an aldehyde containing monomer to the acrylamide (col 3, line 67 to 4, line 2; col 4, lines 42-46).

The art of Coscia et al, Underwood et al, Carrier et al and the instant invention are analogous as pertaining to the use of glyoxylated acrylamide polymers for drainage and retention in aqueous systems. It would have been obvious to one skilled in the art at the time of the invention to use a glyoxylated acrylamide polymer containing zwitterionic monomers as a dewatering agent in the process of Coscia et al or Underwood et al in view of Carrier et al as a known functionally equivalent option.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure [Mallon et al (6013708), Shannon et al (US 2002/0134521)]. They pertain to use of other aldehyde-functionalized acrylamide polymers in papermaking.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DRC
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